

What is claimed is:

- 1     1.     A method, comprising:  
2             dispensing a droplet;  
3             modifying at least one of a direction, a velocity and an acceleration of the droplet  
4     using an optical field; and  
5             disposing the droplet on a surface of a medical device after the modifying.
- 1     2.     The method of claim 1, wherein:  
2             the modifying of the velocity of the droplet includes modifying the velocity of the  
3     droplet to substantially zero temporarily at a position along a path.
- 1     3.     The method of claim 1, wherein:  
2             the droplet is included within a plurality of droplets;  
3             the dispensing includes dispensing the plurality of droplets;  
4             the modifying includes modifying the direction of at least one droplet from the  
5     plurality of droplets on a per-droplet basis using the optical field; and  
6             the disposing includes disposing the plurality of droplets on the medical device after  
7     the modifying the direction of the plurality of droplets.
- 1     4.     The method of claim 1, wherein:  
2             the droplet is included within a plurality of droplets;  
3             the dispensing includes dispensing the plurality of droplets, the dispensing of the  
4     plurality of droplets defines a first plume profile;  
5             the modifying includes modifying the direction of the plurality of droplets using the  
6     optical field, the modifying defines a second plume profile different from the first plume  
7     profile; and  
8             the disposing includes disposing the plurality of droplets having the second plume  
9     profile on the medical device after the modifying the direction of the plurality of droplets.
- 1     5.     The method of claim 1, the optical field is a first optical field, the droplet is included  
2     within a first plurality of droplets, the dispensing includes dispensing the first plurality of  
3     droplets, the modifying includes modifying the direction of the first plurality of droplets

4 using the first optical field, the disposing includes disposing the first plurality of droplets on  
5 the medical device after modifying the direction of the first plurality of droplets, the  
6 method further comprising:

7 dispensing a second plurality of droplets, a droplet from the second plurality of  
8 droplets having a size different from a size of the droplet from the first plurality of droplets;  
9 and

10 modifying the direction of the second plurality of droplets using a second optical  
11 field.

1 6. The method of claim 1, the optical field is a first optical field, the droplet is included  
2 within a first plurality of droplets, the dispensing includes dispensing the first plurality of  
3 droplets, the modifying includes modifying the direction of the first plurality of droplets  
4 using the first optical field, the disposing includes disposing the first plurality of droplets on  
5 the medical device after modifying the direction of the first plurality of droplets, the  
6 method further comprising:

7 dispensing a second plurality of droplets, a droplet from the second plurality of  
8 droplets having a size different from a size of the droplet from the first plurality of droplets;

9 modifying the direction of the second plurality of droplets using a second optical  
10 field; and

11 disposing the second plurality of droplets on the medical device after modifying the  
12 direction of the second plurality of droplets such that the first plurality of droplets and the  
13 second plurality of droplets form interleaving zones on the medical device.

1 7. The method of claim 1, the droplet being a first droplet, the method further  
2 comprising:

3 dispensing a second droplet at a time period at least a portion of which overlaps  
4 with a time period in which the first droplet is dispensed;

5 modifying at least one of a direction and a velocity of the second droplet using the  
6 optical field; and

7 disposing the second droplet on the medical device after the modifying the at least  
8 one of the direction and the velocity of the second droplet.

1     8.     The method of claim 1, the droplet being a first droplet, the method further  
2     comprising:  
3             dispensing a second droplet at a time period at least a portion of which overlaps  
4     with a time period in which the first droplet is dispensed;  
5             modifying at least one of a direction and a velocity of the second droplet using the  
6     optical field; and  
7             disposing the second droplet on the medical device after the modifying the at least  
8     one of the direction and the velocity of the second droplet,  
9             the direction of the first droplet being modified and the direction of the second  
10    droplet being modified such that a position of the first droplet substantially corresponds to a  
11    position of the second droplet.

1     9.     An apparatus, comprising:  
2             a dispenser defining a path of a droplet;  
3             a coherent energy source; and  
4             a beam steering system coupled to the coherent energy source and configured to  
5     define a beam path of the coherent energy source, the beam path of the coherent energy  
6     source being disposable across the dispenser path at an interaction location,  
7             the beam steering system and the coherent energy source collectively configured  
8     such that at least one of a direction, a velocity and an acceleration of the droplet is modified  
9     within the interaction location.

1     10.    The apparatus of claim 9, further comprising:  
2             a sensor configured to measure at least one of a direction and a velocity of the  
3     droplet at a first position and at a second position along the path, the sensor configured to  
4     provide a feedback signal based on a difference in the at least one of the direction and the  
5     velocity of the droplet at the first position and at the second position, the first position being  
6     before the interaction location, the second position being after the interaction location,  
7             the beam steering system and the coherent energy source collectively configured  
8     such that at least one of a direction and a velocity of the droplet is modified within the  
9     interaction location based on the feedback signal.

1     11.     The apparatus of claim 9, further comprising:  
 2             a sensor configured to measure a characteristic of the droplet at a first position and  
 3     at a second position along the path, the sensor configured to provide a feedback signal  
 4     based on the characteristic of the droplet at the first position and at the second position, the  
 5     first position being before the interaction location, the second position being after the  
 6     interaction location,  
 7             the beam steering system and the coherent energy source collectively configured  
 8     such that at least one of a direction and a velocity of the droplet is modified within the  
 9     interaction location based on the feedback signal,  
 10            the measured characteristic is at least one of a size, a weight, a velocity and a  
 11     chemical composition of the droplet on the path, the feedback signal being based on the  
 12     measured at least one of the size, the weight, the velocity and the chemical composition of  
 13     the droplet.

1     12.     The apparatus of claim 9, wherein the coherent energy source and the beam steering  
 2     system are collectively configured as optical tweezers.

1     13.     The apparatus of claim 9, the dispenser being a first dispenser and being associated  
 2     with a droplet characteristic, the system further comprising:  
 3             a second dispenser defining a path and being associated with a droplet characteristic  
 4     different from the droplet characteristic associated with the first dispenser, the beam path of  
 5     the coherent energy source being disposable across the path of the second dispenser at the  
 6     interaction location,  
 7             the beam steering system configured to define a periodic beam profile at the  
 8     interaction location such that the coherent energy source modifies at least one of the  
 9     direction and the velocity of the droplet associated with the first dispenser and modifies at  
 10     least one of a direction and a velocity of the droplet associated with the second dispenser  
 11     differently.

1     14.     The apparatus of claim 9, the dispenser being a first dispenser and being associated  
 2     with a droplet characteristic, the interaction zone being a first interaction zone, the system  
 3     further comprising:

4 a second dispenser defining a path and being associated with a droplet characteristic  
 5 different from the droplet characteristic associated with the first dispenser,  
 6 the beam path of the coherent energy source being disposable across the path of the  
 7 first dispenser at the first interaction location and a second interaction location, the beam  
 8 path of the coherent energy source being disposable across the path of the second dispenser  
 9 at the first interaction location and the second location,  
 10 the beam steering system configured to define a periodic beam profile at the first  
 11 interaction location such that the coherent energy source modifies at least one of the  
 12 direction and the velocity of the droplet associated with the first dispenser and modifies at  
 13 least one of a direction and a velocity of the droplet associated with the second dispenser  
 14 differently,  
 15 the beam steering system configured to define a periodic beam profile at the second  
 16 interaction location such that the coherent energy source modifies at least one of the  
 17 direction and the velocity of the droplet associated with the first dispenser and modifies at  
 18 least one of the direction and the velocity of the droplet associated with the second  
 19 dispenser differently.

1 15. A method, comprising:

2 moving a droplet from a first location to a second location, the first location of the  
 3 droplet being apart from a medical device, the second location being associated with a  
 4 location on a surface of the medical device; and

5 modifying a composition of the droplet so that a composition of the droplet in the  
 6 second position differs from a composition of the droplet in the first position.

1 16. The method of claim 15, wherein the modifying the composition includes removing  
 2 a solvent from the droplet.

1 17. The method of claim 15, wherein:

2 the medical device has a temperature greater than a temperature of the droplet while  
 3 in the first position; and

4 the modifying including increasing a temperature of the droplet while in the second  
 5 position until the temperature of the droplet while in the second position substantially  
 6 corresponds to the temperature of the medical device.

1    18.    The method of claim 15, wherein:  
2           the medical device has a temperature less than a temperature of the droplet while in  
3    the first position; and  
4           the modifying including reducing a temperature of the droplet while in the second  
5    position until the temperature of the droplet while in the second position substantially  
6    corresponds to the temperature of the medical device.

1    19.    The method of claim 15, wherein:  
2           the moving includes reducing a velocity of the droplet to substantially zero at a third  
3    location different from the first location and the second location; and  
4           the modifying the composition includes removing a solvent from the droplet while  
5    in the third location.

1    20.    An article of manufacture, comprising:  
2           a medical device having a surface; and  
3           a coating disposed on at least a portion of the surface of the medical device, the  
4    coating including a plurality of polymers and excluding a monomer component.

1    21.    The article of manufacture of claim 21, wherein:  
2           the coating further includes a pharmaceutical component.